CLAIMS

We claim:

1. A method, comprising:

a) providing:

i) uridine-5'-diphosphoglucose;

ii) a sulfur donor;

iii) a first peptide capable of catalyzing the conversion of uridine-5'-diphosphoglucose to uridine-5'-diphosphosulfoquinovose; and

iv) a second peptide capable of transferring sulfoquinovose from uridine-5'-diphosphosulfoquinovose onto diacylglycerol;

b) reacting said uridine-5'-diphosphoglucose with said first peptide and said sulfur donor under such conditions that uridine-5'-diphosphosulfoquinovose is generated; and

c) treating said uridine-5'-diphosphosulfoquinovose with said second peptide under conditions such that sulfoquinovose diacylglycerol is generated.

2. The method of Claim 1, wherein said first peptide is a encoded by the nucleic acid sequence set forth in SEQ ID NO: 6.

3. The method of Claim 1, wherein said second peptide is encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO: 3, SEQ ID NO: 4 and SEQ ID NO: 5, and portions thereof.

4. The method of Claim 1, wherein said sulfur donor is selected from the group consisting of sulfate, sulfide, thiosulfate, sulfoglutathione, adenosine 5'-phosphosulfate, and 3'-phosphoadenosine-5'-phosphosulfate.

5. The method of Claim 1, wherein said sulfur donor is sulfite.

6. A method, comprising:

a) providing:

i) uridine-5'-diphosphoglucose;

ii) a sulfur donor;

iii) a peptide capable of catalyzing the conversion of uridine-5'-diphosphoglucose to uridine-5'-diphosphosulfoquinovose;

iv) an acid catalyst;

v) a short-chain alcohol; and

vi) a long-chain alcohol;

b) reacting said uridine-5'-diphosphoglucose with said peptide and said sulfur donor under such conditions that uridine-5'-diphosphosulfoquinovose is generated;

c) reacting said uridine-5'-diphospho-sulfoquinovose with said short-chain alcohol and said acid catalyst under such conditions that a short-chain alkyl sulfoquinovoside is generated;

d) treating said short-chain alkyl sulfoquinovoside with said long-chain alcohol under such conditions that a long-chain alkyl sulfoquinovoside is generated.

7. The method of Claim 6, wherein said short-chain alcohol is selected from the group consisting of methanol, ethanol, propanol, pentanol, hexanol, heptanol, octanol, nonanol, and isomers thereof.

8. The method of Claim 6, wherein said short-chain alcohol is butanol.

9. The method of Claim 6, wherein said acid catalyst is selected from the group consisting of H_2SO_4, HCl, H_3PO_4, BF_3, ortho-toluenesulfonic acid,

meta-toluenesulfonic acid, alkylbenzenesulfonic acid, secondary alkyl-sulfonic acid, sulfonic resin, alkylsulfate, alkylbenzenesulfonate, alkyl-sulfonate, and sulfosuccinic acid.

10. The method of Claim 6, wherein said acid catalyst is para-toluenesulfonic acid.

11. The method of Claim 6, wherein said long-chain alcohol is selected from the group consisting of n-dodecyl alcohol, n-tetradecyl alcohol, n-hexadecyl alcohol, n-octadecyl alcohol, n-octyl alcohol, n-decyl alcohol, undecyl alcohol, and tridecyl alcohol.

12. The long-chain alkyl sulfoquinovoside prepared according to Claim 6.

13. A method, comprising:

a) providing:

i) uridine-5'-diphosphoglucose;

ii) a sulfur donor; and

iii) a peptide encoded by the nucleic acid sequence set forth in SEQ ID NO: 6; and

b) reacting said uridine-5'-diphosphoglucose with said peptide and said sulfur donor under such conditions that uridine-5'-diphosphosulfoquinovose is generated.

14. The method of Claim 13, wherein said sulfur donor is sulfite.